



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,177	11/02/2001	Bruce J. Sabacky	10225/21 (A18)	1846

7590 11/30/2004

G. Peter Nichols  
BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610

EXAMINER

JOHNSON, EDWARD M

ART UNIT PAPER NUMBER

1754

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/053,177

Applicant(s)

SABACKY ET AL.

Examiner

Edward M. Johnson

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21,22 and 24 is/are allowed.
- 6) ☒ Claim(s) 1-4,7-9,11-13,16-18,20 and 23-26 is/are rejected.
- 7) ☒ Claim(s) 5,6,10,14,15 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Objections***

1. Claim 24 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim fails to further limit claim 12, from which it depends.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7-9, 11-13, 16-18, 20, and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Soumiya et al. US 4,769,351.

Regarding claims 1, 12, and 26 Soumiya '351 discloses a process for producing zirconia powder having diameter of 10 nm (Example 1) comprising forming an acidic aqueous zirconium oxychloride, HCl (Example 3) and stabilizer solution, hydrolysis, and calcining (abstract). Soumiya '351 further

Art Unit: 1754

discloses hydrolysis (abstract), and spray drying (see column 2, lines 55-57) and 120 degrees Celsius (Example 1), which may form agglomerates (see column 2, lines 57-65).

Regarding claims 2-3 and 25, Soumiya '351 discloses zirconium oxychloride (abstract) and yttrium chloride (see column 3, lines 23-26), which would inherently correspond to an x-ray diffraction pattern of the same contents.

Regarding claims 4, 7-9, 13, and 16-18, Soumiya '351 discloses hydrolysis (abstract), and spray drying (see column 2, lines 55-57) and 120 degrees Celsius (Example 1), which may form agglomerates (see column 2, lines 57-65).

Regarding claims 11 and 20, Soumiya '351 discloses calcining at 1000 degrees Celsius (see Example 1).

Regarding claims 23-24, Soumiya '351 discloses HCl (see Example 3).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Art Unit: 1754

5. Claims 1-4, 7, 9, and 11, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamling et al. US 4,065,544.

Regarding claim 1, Hamling '544 discloses a method of making zirconium oxide (see column 2, lines 5-15) comprising forming a zirconium oxychloride acid solution (see column 3, lines 46-61 and Examples 1 and 4), spray or thin-film drying the solution (see column 5, lines 42-49), and ignition with or without a flame to form non-fragile agglomerates (see column 5, lines 56-68 and column 6, lines 1-5) having a particle size of 200-1000 Angstroms (see column 8, lines 13-17).

Hamling fails to disclose spray drying at specifically about 120-350 degrees.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to conduct the spray drying of Hamling at about 300 degrees Celsius because Hamling advantageously discloses drying and ignition together at about 300 to about 900 degrees Celsius to essentially remove all carbohydrate material (see column 6, lines 9-18).

Regarding claims 2-3, Hamling '544 discloses forming a zirconium oxychloride and yttrium chloride solution (see column 3, lines 46-61 and Example 1).

Regarding claims 4 and 7, Hamling '544 discloses hydrolysis of the zirconia and spray drying (see column 7, lines 41-44 and column 5, lines 42-49).

Regarding claim 9, Hamling '544 discloses non-fragile agglomerates (see column 5, lines 56-68 and column 6, lines 1-5).

Regarding claim 11, Hamling '544 discloses ignition with or without a flame to form non-fragile agglomerates at 900-1300 degrees Celsius (see column 5, lines 56-68 and column 6, lines 1-5).

***Allowable Subject Matter***

6. Claims 21-22 are allowed.
7. Claims 6, 14-15, and 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
8. Claims 5 and 10 are objected to under 37 CFR 1.75 as being substantial duplicates of claims 21 and 22. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

9. The following is a statement of reasons for the indication of allowable subject matter: It would not have been obvious to one of ordinary skill in the art at the time the invention was made to: form hydrochloric acid and remove water during the hydrolyzing step in the process of the instant claims 5 and 14; nor form the thin film of zirconia in the form of membranes with a diameter of 1-100 microns and thickness of 30-1000 nm in the process of the instant claims 10 and 19.

***Response to Arguments***

10. Applicant's arguments filed 7/6/04 have been fully considered but they are not persuasive.

It is argued that in contrast, the present process forms... aqueous solution. This is not persuasive because Soumiya discloses a spray drying step before the final product is formed and removed, which corresponds to an intermediate.

It is argued that the Examiner's reference to... is misplaced. This is not persuasive because Applicant appears to admit that both spray drying and a drying temperature of 120 degrees are disclosed and Applicant does not appear to argue that the spray drying of Soumiya would be done at a different temperature than the disclosed drying temperature.

It is argued that claims 1-4, 7 and 9, were also rejected as anticipated by Hamling. This is not persuasive because

Art Unit: 1754

Applicant appears to admit that spray drying followed by ignition is disclosed and Hamling discloses drying and ignition together at about 300 to about 900 degrees Celsius to essentially remove all carbohydrate material (see column 6, lines 9-18).

**Conclusion**

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.




12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EMJ

  
STANLEY S. SILVERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700